REMARKS

1.   This Amendment is responsive to the non-final Office Action mailed July 16, 2007. Claims 35-60 are pending in the application. The Office Action objects to Claims 44, 53 and 54 because of informalities, which are corrected in the amendments above. Claims 35-43 are rejected under 35 U.S.C. § 112, second paragraph, because of antecedent basis. The claims have been amended to correct antecedent basis. Claims 35-37, 39, and 43 are rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Pat. No. 6,394,771 to Robert Butterfield ("Butterfield"). Claims 44-49, 51-58, and 60 are rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Pat. No. 4,855,660 to Danny Wright et al. ("Wright") in view of U.S. Pat. Appl. Publ. 2003/0025396 to Richard Cartledge et al. ("Cartledge"). Claims 50 and 59 are rejected as unpatentable over Wright and Cartledge and further in view of U.S. Pat. Appl. Publ. 2003/0235409 to Douglas Harriman et al. ("Harriman"). Claims 40-41 are rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Pat. No. 6,394,771 to Robert Butterfield ("Butterfield") in view of U.S. Pat. Appl. Publ. 2003/0235409 to Douglas Harriman et al. ("Harriman"). Claims 38 and 42 are rejected under 35 U.S.C. § 103(a) as unpatentable over Butterfield in view of, respectively, U.S. Pat. Appl. Publ. 2003/0025396 to Richard Cartledge et al. ("Cartledge"), and U.S. Pat. No. 6,208,107 to Rudolph Maske et al. ("Maske").

2.   Claims 35-37, 39, and 43 are rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Pat. No. 6,394,771 to Robert Butterfield ("Butterfield").   Claim 35 has been amended to add the limitations of Claim 36, that the method includes use of a relational database wherein the position in the pump cycle and an expected current value are related to each other. The amendment overcomes the rejection, because this limitation is not found in Butterfield. Butterfield teaches a lookup table which stores pumping volume or flow rate vs. motor step or microstep position, but does not teach a relational database that relates position in the pump cycle to expected motor electrical current.   Accordingly, amended Claim 35 is allowable, as are all claims depending from Claim 35, Claims 36-42. Claim 36 has been amended to include new limitations from the specification, paragraph [0155].

Several of the dependent claims are allowable because their limitations are also not taught or suggested in the references, including at least Claim 37, because Butterfield does not teach or suggest a database of expected current value vs. any parameter, including parameters of pump cycle and flow rate. The Examiner is respectfully requested to withdraw the rejections of Claims 35-37, 39, and 43.

3. Claims 44-49, 51-58, and 60 are rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Pat. No. 4,855,660 to Danny Wright et al. ("Wright") in view of U.S. Pat. Appl. Publ. 2003/0025396 to Richard Cartledge et al. ("Cartledge"). Applicants traverse the rejection because neither Wright nor Cartledge, nor the combination, teaches all the limitations of the claim.

At least two elements of independent Claims 44 and 53 are not taught. These claims require "a table of an expected electrical current value for a plurality of motor positions or output volumes," and also require "a table for an expected electrical current value based" upon at least one of several parameters, the parameters including backpressure of the fluid, age of the motor, and age of the tubing used in the infusion pump.

The rejection cites Wright, col. 3, lines 3-45, as teaching these limitations. Wright, however, teaches a lookup table of motor position versus step or microstep value. This is all Wright can teach, because Wright is limited to a present position sensor 20 and a desired position sensor 22, as noted in the cited passage. Wright in particular states:

> In response to the electricals [sic] signals from the two sensors 20, 22, the MPU generates from a look-up table in the MPU an output data word 24 of at least eight bit positions which is supplied to the pair of D/A converters U1 and U2. The look-up table in the MPU has sixty-four data words which digitally approximate the SINE and COSINE functions of each angular microstep. In the present embodiment, the resolution is thirty-two microsteps per full motor step.

Wright teaches a look-up table that does not include an expected electrical current value versus any other parameter, and thus does not teach or suggest the limitations of independent Claims 44 and 53. Cartledge teaches a temperature sensor, for measuring and adjusting the temperature of the fluid pumped by heating the fluid. See paragraph [0062]. This has nothing to do with motor performance or pumping efficiency. Combining the sensors of Cartledge with the look-up table of Wright at most suggests a look-up table of temperature vs. motor position or step/microstep value. Nothing in Wright or Cartledge teaches or suggests a table with an expected electrical current value versus any parameter. Claims 44 and 53 are allowable, as are dependent Claims 45-49, 51-52, 54-58, and 60.

Claims 49 and 58

Several of the claims depending from Claims 44 and 53 are also allowable because the references do not teach or suggest their limitations. For example, Claim 49 recites a

limitation wherein the output of the motor controller is responsive to changes in the age of the tubing. The rejection states, on p. 4, lines 16-18, that the features of the apparatus must be recited either structurally or functionally, and that claims directed to an apparatus must be distinguished from the prior art in terms of structure, not function. The rejection then states that Wright meets the claim since Wright includes a memory and is capable of storing the age of the tubing, and is thus capable of performing the intended use as recited in the claim.

Claim 44 includes structure, a look-up table that includes an age of the tubing. Claim 49 thus is structurally distinguished over Wright, because it uses the structure of Claim 44. The same argument applies to Claim 58. Claims 44 and 58 are thus additionally allowable because the references do not teach or suggest the limitations of Claims 44 and 58.

4.   Claims 50 and 59 are rejected as unpatentable over Wright and Cartledge and further in view of U.S. Pat. Appl. Publ. 2003/0235409 to Douglas Harriman et al. ("Harriman"). The rejection admits that Wright and Cartledge fail to teach that the output of the motor controller is responsive to the age of the motor, Office Action, p. 6, lines 5-7, but that Harriman teaches modifying the output of the controller in response to the age of the controller to ensure proper performance, citing Harriman paragraphs [0015] and [0016]

Applicants traverse the rejection, because Harriman teaches no such thing. In the cited paragraphs, Harriman teaches that motor performance may be affected by a number of parameters, including winding temperature, load characteristics, and age of the motor. Thus, motors can stall or fail. Harriman states that his controller can indirectly monitor the age of the motor, and can adjust the usage of the motor when necessary without needing a sensor. See paragraph [0016], last lines. There is no teaching that the output of the motor controller is responsive to changes in the age of the motor as embodied in a table that includes an expected electrical current based upon the value of an age of the motor, as recited in Claim 44, from which Claim 50 depends. The same holds true for Claim 59, which depends from Claim 53. Accordingly, Claims 50 and 59 are allowable at least because they depend from allowable Claims 44 and 53. Harriman certainly does not present, alone or in combination with Wright and Cartledge, an enabling disclosure that teaches the limitation of these claims, and thus fails as a reference against these claims.

5. Claims 40-41 are rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Pat. No. 6,394,771 to Robert Butterfield ("Butterfield") in view of U.S. Pat. Appl. Publ.

2003/0235409 to Douglas Harriman et al. ("Harriman"). The Office Action admits that Butterfield does not teach this limitation, but that Harriman teaches modifying the output of the controller in response to an elapsed time value (Claim 40) or the age of the infusion pump stepper motor (Claim 41). By the same reasoning for Claims 50 and 59 above, Claims 40 and 41 are allowable at least because they depend from allowable Claim 35. Harriman and Butterfield also fail to teach or suggest an enabling disclosure that teaches the limitations of Claims 40 and 41, and thus they fail to make the claims obvious.

6. Claims 38 and 42 are rejected under 35 U.S.C. § 103(a) as unpatentable over Butterfield in view of, respectively, U.S. Pat. Appl. Publ. 2003/0025396 to Richard Cartledge et al. ("Cartledge"), and U.S. Pat. No. 6,208,107 to Rudolph Maske et al. ("Maske"). As to Claim 38, the Office Action admits that Butterfield does not teach modifying the electrical current value in response to input from a temperature sensor, but that Cartledge teaches a temperature sensor. The rejection then states that by adding Cartledge's sensor to the system of Butterfield, one would adjust "the system" in response to a sensed temperature value.

As noted above, Cartledge uses a temperature sensor to sense and adjust a temperature of the fluid being pumped with a heater, not to adjust an electrical current value for driving an infusion pump stepper motor. Accordingly, Wright and Cartledge do not teach or suggest the limitations of Claim 38, which is therefore allowable. Claim 42 is allowable because it depends from allowable Claim 35.
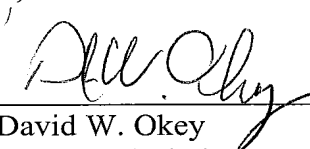
7. For the foregoing reasons Applicants submit respectfully that this case is in condition for allowance. If the Examiner has any questions regarding this case or Response, Applicants request that the attorney below be contacted. The Commissioner is hereby authorized to charge deposit account 02-1818 for any fees which are due and owing.

Respectfully submitted,

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